



News Release

Defense Advanced Research Projects Agency

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IMMEDIATE RELEASE

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MICRO ADAPTIVE FLOW CONTROL REDUCES DOWNLOAD FORCES ON XV-15

The Defense Advanced Research Projects Agency (DARPA) Micro Adaptive Flow Control (MAFC) program has conducted flight tests on the full-scale XV-15 experimental airplane that have confirmed that MAFC technology will provide a dramatic 14 percent reduction in download forces during hover by controlling the flow of air around the wing.

The unsteady active flow control system retrofitted into the XV-15 is the first-ever full-scale application of MAFC technologies and has validated the utility of flow control for full-scale aircraft. The tests have shown that MAFC technologies integrated into a new aircraft during the design stage would allow the aircraft to carry more payload. For example, on a 25-ton tilt-rotor aircraft, calculations indicate that up to an additional 1,000 pounds of extra payload could be accommodated.

The goal of DARPA's MAFC program is to develop engineering design tools and demonstrate adaptive flow control technologies for various military applications.

The XV-15 MAFC effort, which included over four years of laboratory experiments and actuator development and over six hours of flight tests, was conducted by teams from Bell Helicopter and The Boeing Company, as well as the research groups of Professors Israel Wygnanski (Tel Aviv University and University of Arizona) and Hassan Nagib (Illinois Institute of Technology), who pioneered the development of the techniques and actuator technology, developed the understanding of the flow phenomena, and carried out the risk-reduction testing.

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